

State of Florida  
Department of Transportation  
Research Center  
605 Suwannee Street, MS 30  
Tallahassee, FL 32399-0450

## REQUEST FOR RESEARCH PROPOSAL REGISTRATION

\*\*\*\*\*

**PLEASE COMPLETE AND RETURN THIS FORM ASAP  
TO PATTI BRANNON at [patti.brannon@dot.state.fl.us](mailto:patti.brannon@dot.state.fl.us)**

\*\*\*\*\*

RFRP Number: RFRP-15/16-001

Title: Wind Effects on Mast Arms

Proposal Due Date & Time (On or Before): March 22, 2016 at 11:00 AM

Potential proposers should notify our office by returning this Registration Form as soon as possible after downloading. Complete the information below and e-mail to Patti Brannon at [patti.brannon@dot.state.fl.us](mailto:patti.brannon@dot.state.fl.us)

**THE REQUEST FOR RESEARCH PROPOSAL DOCUMENT YOU RECEIVED IS SUBJECT TO CHANGE. Notice of changes (Addenda), will be posted on the Research Center website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal.**

University Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone: (\_\_\_\_) \_\_\_\_\_ Fax Number: (\_\_\_\_) \_\_\_\_\_

Contact Person: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

For further information on this process, e-mail or telephone: Patti Brannon, 850-414-4616 or [patti.brannon@dot.state.fl.us](mailto:patti.brannon@dot.state.fl.us)

## PRICE PROPOSAL FORM

RFRP Number: RFRP-15/16-001

RFRP Title: Wind Effects on Mast Arms

**Services to be provided as specified in attached Exhibit "A", Scope of Services.**

The maximum amount of funding allocated to this project is \$200,000.00

**Note: Task 1 Kickoff Meeting / Presentation – no payment is made**

Task 2 Deliverable	\$Lump Sum Amount
Task 3 Deliverable	\$Lump Sum Amount
Task 4 Deliverable	\$Lump Sum Amount
Task 5 Deliverable	\$Lump Sum Amount
Task 6 Deliverable	\$Lump Sum Amount
Task 7 Deliverable	\$Lump Sum Amount
Task 8 Deliverable	\$Lump Sum Amount

Travel and Indirect Cost on Travel      \$Maximum Amount

The total lump sum amount per task shall include costs of salaries, overhead, fringe benefits, indirect cost, and expenses. Travel and Indirect Cost on Travel shall be identified as a separate item, if applicable. All travel shall be in accordance with Section 112.061 Florida Statute.

The Proposer shall attached a detail budget to support the lump sum amount identified per task.

**The Indirect Cost Rate on this project is limited to 10%.**

**NOTE:** In submitting a response, the proposer acknowledges they have read and agree to the solicitation terms and conditions and their submission is made in conformance with those terms and conditions.

**ACKNOWLEDGEMENT:** I certify that I have read and agree to abide by all terms and conditions of this solicitation and that I am authorized to sign for the proposer. I certify that the response submitted is made in conformance with all requirements of the solicitation.

Proposer: \_\_\_\_\_ FEID # \_\_\_\_\_

Address: \_\_\_\_\_ City, State, Zip \_\_\_\_\_

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed / Typed: \_\_\_\_\_ Title: \_\_\_\_\_

**State of Florida  
Department of Transportation**

REQUEST FOR RESEARCH PROPOSAL

Wind Effects on Mast Arms

RFRP-15/16-001

**CONTACT FOR QUESTIONS:**

Patti Brannon  
patti.brannon@dot.state.fl.us  
Phone: 850-414-4616  
Research Center  
605 Suwannee Street, MS 30  
Tallahassee, FL 32399-0450

# INTRODUCTION SECTION

## 1) INVITATION

The Research Center requests written proposals from qualified Universities to provide research services on Wind Effects of Master Arms. It is anticipated that the term of the contract will begin on execution of a task work order and be effective through date identified by university in the Deliverables Schedule (Attachment 1).

The Research Center intends to award this contract to the responsive and responsible University whose proposal is determined to be the most advantageous to the Department. For the purpose of this document, the term "Proposer" means the prime University acting on its own behalf and those individuals, partnerships, firms, or corporations comprising the Proposer team. The term "proposal" means the complete response of the Proposer to the Request for Research Proposals (RFRP), including properly completed forms and supporting documentation.

## 2) TIMELINE

Provided below is a list of critical dates and actions. These dates are subject to change. Notices of changes (Addenda) will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal.

<u>ACTION / LOCATION</u>	<u>DATE</u>	<u>LOCAL TIME</u>
<b>PRE-PROPOSAL CONFERENCE (if applicable)</b> Teleconference Line: 850-414-4972 PIN 490513 605 Suwannee Street, Room 348, Tallahassee, FL 32399	<b>02-02-2016</b>	<b>8:30 AM</b>
<b>DEADLINE FOR TECHNICAL QUESTIONS</b> (There is no deadline for administrative questions)	<b>02-04-2016</b>	<b>3:00 PM</b>
<b>PROPOSALS DUE, ON OR BEFORE</b> (Technical and Price Proposal) FDOT Research Center 605 Suwannee Street, MS 30 Tallahassee, FL 32399-00450 Attention: Patti Brannon	<b>03-22-2016</b>	<b>11:00 AM</b>
<b>PUBLIC OPENING (Technical Proposal)</b> FDOT Research Center 605 Suwannee Street, SE063 (3 <sup>rd</sup> Floor) Tallahassee, FL 32399	<b>03-22-2016</b>	<b>11:15 AM</b>
<b>PUBLIC OPENING / SELECTION MEETING</b> (Price Proposal) Teleconference Line: 850-414-4972 PIN 490513 605 Suwannee Street, Room 348, Tallahassee, FL 32399	<b>04-05-2016</b>	<b>1:00 PM</b>
<b>POSTING OF INTENDED AWARD</b>	<b>04-06-2016</b>	<b>8:30 AM</b>

### **3) AGENDA FOR PUBLIC MEETINGS**

#### **Agenda – Public Opening (Technical Proposals)**

Agenda for Public Opening of Technical Proposals for RFRP-15/16-001:

- Opening remarks of approx. 2 minutes by Research Center personnel related to the RFRP solicitation.
- At conclusion of public input or 15 minutes, whichever occurs first, the Technical Proposals received timely will be opened, with proposer's name read aloud and tabulated. Price proposals will be kept secured and unopened until the Price Proposal Opening.
- Adjourn meeting.

#### **Agenda – Price Proposal Opening & Intended Award Meeting**

Agenda for Price Proposal Opening and Intended Award meeting for RFRP-15/16-001:

- Opening remarks of approx. 2 minutes by Research Center personnel.
- Public input period – To allow a maximum of 15 minutes total for public input related to the RFRP solicitation.
- At conclusion of public input or 15 minutes, whichever occurs first, the Technical evaluation scores will be summarized.
- Announce the universities that did not achieve the minimum technical score.
- Announce the universities that achieved the minimum technical score and their price(s) as price proposals are opened.
- Calculate price scores and add to technical scores to arrive at total scores.
- Announce Proposer with highest Total Score as Intended Award.
- Announce time and date the decision will be posted on the Research Center website.
- Adjourn.

### **4) SPECIAL ACCOMMODATIONS**

Any person with a qualified disability requiring special accommodations at a pre-proposal conference, public meeting, oral presentation and/or opening shall contact the contact person at the phone number or e-mail address provided on the title page at least five (5) working days prior to the event. If you are hearing or speech impaired, please contact this office by using the Florida Relay Services which can be reached at 1 (800) 955-8771 (TDD).

## **SPECIAL CONDITIONS**

### **1) QUESTIONS & ANSWERS**

In accordance with section 287.057(23), Florida Statutes, respondents to this solicitation or persons acting on their behalf may not contact, between the release of the solicitation and the end of the 72-hour period following the agency posting the notice of intended award, excluding Saturdays, Sundays, and state holidays, any employee or officer of the executive or legislative branch concerning any aspect of this solicitation, except in writing to the contact person provided in the solicitation documents. Violation of this provision may be grounds for rejecting a response.

Any technical questions arising from this Request for Research Proposal must be forwarded, in writing, to the person identified below. Questions must be received no later than the time and date reflected on the Timeline. The Research Center's written response to written inquiries submitted timely by proposers will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting their proposal.

**WRITTEN TECHNICAL QUESTIONS** should be submitted to:

**Patti Brannon, Research Center, 605 Suwannee Street, MS 30, Tallahassee, FL 32399-0450; 850-414-**

Questions regarding administrative aspects of the proposal process should be directed to the Patti Brannon in writing at the address above or by phone: 850-414-4616

## **2) ORAL INSTRUCTIONS / CHANGES TO THE REQUEST FOR RESEARCH PROPOSAL (ADDENDA)**

No negotiations, decisions, or actions will be initiated or executed by a proposer as a result of any oral discussions with a State employee. Only those communications which are in writing from the Department will be considered as a duly authorized expression on behalf of the Department.

Notices of changes (Addenda) will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> under this RFRP number. It is the responsibility of all potential proposers to monitor this site for any changing information prior to submitting your proposal. All Addenda will be acknowledged by signature and subsequent submission of Addenda with proposal when so stated in the Addenda.

## **3) SCOPE OF SERVICES**

Details of the services, information and items to be furnished by the University are described in Exhibit "A", Scope of Services, attached hereto and made a part hereof.

## **4) INTENDED AWARD**

The Research Center intends to award a contract to the responsive and responsible university with the highest cumulative total points for the evaluation criteria specified herein (See Section 19, Proposal Evaluation). The Intended Award decision will be announced after final evaluation and totaling of scores at the Price Proposal opening specified in the Timeline (See Introduction Section 2 Timeline). If the Research Center is confronted with identical pricing or scoring from multiple universities, the Research Center shall determine the order of award in accordance with section 295.187(4), Florida Statutes, and Rule 60A-1.011 Florida Administrative Code.

## **5) PRE-PROPOSAL CONFERENCE**

The Research Center will convene a meeting to provide an open forum for the Research Center to review the Scope of Services for this Request for Research Proposal (RFRP) and respond to questions from potential proposers regarding the scope of services, RFRP requirements, contractual requirements, method of compensation, and other conditions or requirements that may, in any manner, affect the work to be performed. The Pre-Proposal Conference will be held at the date, time and location in the Timeline. Any changes and/or resulting Addenda to the RFRP will be the sole prerogative of the Research Center

Attendance at this Pre-Proposal Conference is Highly Recommended. Each university should fully acquaint themselves with the conditions relating to the performance of services under the conditions of this solicitation. No allowances will be made to the awarded university because of lack of knowledge about conditions or requirements, and the awarded university will not be relieved of any liabilities or obligations.

## **6) QUALIFICATIONS**

### **6.1 General**

The Department will determine whether the Proposer is qualified to perform the services being contracted based upon their proposal demonstrating satisfactory experience and capability in the work area. The Proposer shall identify necessary experienced personnel and facilities to support the activities associated with this proposal.

### **6.2 Qualifications of Key Personnel**



Those individuals who will be directly involved in the project should have demonstrated experience in the areas delineated in the scope of work. Individuals whose qualifications are presented will be committed to the project for its duration unless otherwise accepted by the Research Center.

#### **7) METHOD OF COMPENSATION**

For the satisfactory performance of the services describe in attached Exhibit A, Scope of Service, the University shall be paid as described in the attached Exhibit B, Method of Compensation.

#### **8) CONTRACT DOCUMENT**

The Master University Agreement will serve as the contracting document. The Research Center will issue a task work order to the University receiving the award.

#### **9) REVIEW OF PROPOSER'S FACILITIES & QUALIFICATIONS**

After the proposal due date and prior to contract execution, the Research Center reserves the right to perform or have performed an on-site review of the University's facilities and qualifications. This review will serve to verify data and representations submitted by the University and may be used to determine whether the University has an adequate, qualified, and experienced staff, and can provide overall management facilities.

Should the Research Center determine that the proposal has material misrepresentations or that the size or nature of the University's facilities or the number of experienced personnel (including technical staff) are not adequate to ensure satisfactory contract performance, the Research Center has the right to reject the proposal.

#### **10) PROTEST OF REQUEST FOR PROPOSAL SPECIFICATIONS**

Any person who is adversely affected by the contents of this Request for Research Proposal must file the following with the Department of Transportation, Clerk of Agency Proceedings, Office of the General Counsel, 605 Suwannee Street, Mail Station 58, Tallahassee, Florida 32399-0450:

1. A written notice of protest within seventy-two (72) hours after the posting of the solicitation, (the notice of protest may be Faxed to 850-414-5264), and
2. A formal written protest in compliance with Section 120.57(3), Florida Statutes, within ten (10) days of the date on which the written notice of protest is filed.

Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

#### **11) RESERVATIONS**

The Research Center reserves the right to accept or reject any or all proposals received and reserves the right to make an award without further discussion of the proposals submitted. Therefore, the proposals should be submitted initially in the most favorable manner. It is understood that the proposal will become a part of the Research Center's official file, without obligation to the University.

#### **12) ADDITIONAL TERMS & CONDITIONS**

No conditions may be applied to any aspect of the RFRP by the proposer. Any conditions placed on any aspect of the proposal documents by the proposer may result in the proposal being rejected as a conditional proposal. The only recognized changes to the RFRP prior to proposal opening will be a written Addenda issued by the Department.

#### **13) RESPONSIVENESS OF PROPOSALS**

### 13.1 Responsiveness of Proposals

Proposals will not be considered if not received by the Research Center **on or before** the date and time specified as the due date for submission. All proposals must be typed or printed in ink. A responsive proposal is an offer to perform the scope of services called for in this Request for Research Proposal in accordance with all requirements of this Request for Research Proposal and receiving seventy (70) points or more on the Technical Proposal. Proposals found to be non-responsive shall not be considered. Proposals may be rejected if found to be irregular or not in conformance with the requirements and instructions herein contained. A proposal may be found to be irregular or non-responsive by reasons that include, but are not limited to, failure to utilize or complete prescribed forms, conditional proposals, incomplete proposals, indefinite or ambiguous proposals, and improper and/or undated signatures.

### 13.2 Multiple Proposals

Proposals may be rejected if more than one proposal is received from a University. Such duplicate interest may cause the rejection of all proposals in which such University has participated. Subcontractors may appear in more than one proposal.

### 13.3 Other Conditions

Other conditions which may cause rejection of proposals include, but are not limited to, evidence of collusion among Universities, obvious lack of experience or expertise to perform the required work, failure to perform or meet financial obligations on previous contracts. University's whose proposals, past performance, or current status do not reflect the capability, integrity, or reliability to fully and in good faith perform the requirements of the Contract may be rejected as non-responsible. The Research Center reserves the right to determine which proposals meet the requirements of this solicitation, and which Proposers are responsive and responsible.

## 14) PROPOSAL FORMAT INSTRUCTIONS

### 14.1 General Information

This section contains instructions that describe the required format for the proposal. All proposals submitted shall contain two parts and be marked as follows:

PART I TECHNICAL PROPOSAL NUMBER RFRP- 15/16-001  
(One Separately Sealed Package for Technical)

PART II PRICE PROPOSAL NUMBER RFFP-15/16-001  
(One Separately Sealed Package for Prices)

THE SEPARATELY SEALED PACKAGES MAY BE MAILED TOGETHER IN ONE ENVELOPE OR BOX.

### 14.2 Technical Proposal (Part I) (5 copies) (Do not include price information in Part I)

The Proposer must submit 5 copies of the technical proposal which are to be divided into the sections described below. Since the Department will expect all technical proposals to be in this format, failure of the Proposer to follow this outline may result in the rejection of the proposal. The technical proposal must be submitted in a separate sealed package marked "TECHNICAL PROPOSAL NUMBER RFRP-15/16-001 ".

#### 1. TECHNICAL PLAN



The Proposer must demonstrate a solid knowledge of the problem and its background. It should not be a duplication of the RFRP. A scientific and practical approach to the resolution of the problem should include analytical procedures, knowledge accumulation (research), cooperative features, and innovative concepts. The Proposer should explain the approach and means to be used in accomplishing the tasks and where difficulties may be anticipated and resolved.

## 2. MANAGEMENT PLAN

The Proposer should include a description of the organizational structure, management style, the methodology to be used to control service reliability and to maintain schedules; as well as the means of coordination and communication between the organization and the Department. The Proposer should provide the names of key personnel on the Proposer's team, as well as a resume for each individual proposed and a description of the functions and responsibilities of each key person relative to the task to be performed. The approximate percent of time to be devoted exclusively for this project and to the assigned tasks should also be indicated. The Proposer should explain the capabilities and resources available (for example, analysis software) to be used in accomplishing the tasks.

## 3. WORK PLAN

The Proposal shall provide a Work Plan which sets forth on an average the estimated staff-hours and a timeline (Attachment 1) for the deliverable submittal.

### 14.3 Price Proposal (Part II) (2 copies)

The price proposal information is to be submitted in a separate sealed package marked "PRICE PROPOSAL NUMBER RFRP-15/16-001". The Price Proposal information shall be submitted on the forms provided in the Request for Research Proposal.

### 14.4 Presenting the Proposal

The proposal shall be limited to a page size of eight and one-half by eleven inches (8½" x 11"). Foldout pages may be used, where appropriate, but should not exceed five (5) percent of the total number of pages comprising the proposal. Type size shall not be less than 10 point font. Bindings and covers will be at the Proposer's discretion.

Unnecessarily elaborate special brochures, art work, expensive paper and expensive visual and other presentation aids are neither necessary nor desired.

It is recognized that existing financial reports, documents, or brochures, such as those that delineate the Proposer's general capabilities and experience, may not comply with the prescribed format. It is not the intent to have these documents reformatted and they will be acceptable in their existing form.

## 15) COSTS INCURRED IN RESPONDING

This Request for Research Proposal does not commit the Research Center or any other public agency to pay any costs incurred by a university in the submission of a proposal or to make necessary studies or designs for the preparation thereof, nor to procure or contract for any articles or services.

## 16) MAIL OR DELIVER PROPOSAL TO: (DO NOT FAX OR SEND BY E-MAIL)

Florida Department of Transportation  
Attention: Patti Brannon  
Research Center  
605 Suwannee Street, MS 30  
Tallahassee, FL 32399-0450

It is the proposer's responsibility to assure that the proposal (Technical and Price proposal) is delivered to the proper place **on or before** the Proposal Due date and time (See Introduction Section 2 Timeline). Proposals which for any reason are not so delivered will not be considered.

By submitting a proposal, the University represents that it understands and accepts the terms and conditions to be met and the character, quality and scope of services to be provided.

All proposals and associated forms shall be signed and dated in ink by a duly authorized representative of the Proposer.

Each University shall fully acquaint itself with the conditions relating to the performance of the services under the conditions of this Request for Research Proposal. This may require an on-site observation.

#### **17) MODIFICATIONS, RESUBMITTAL AND WITHDRAWAL**

Proposers may modify submitted proposals at any time prior to the proposal due date. Requests for modification of a submitted proposal shall be in writing and must be signed by an authorized signatory of the proposer. Upon receipt and acceptance of such a request, the entire proposal will be returned to the proposer and not considered unless resubmitted by the due date and time. Proposers may also send a change in a sealed envelope to be opened at the same time as the proposal. The RFRP number, due date and time should appear on the envelope of the modified proposal.

#### **18) PROPOSAL OPENING**

All proposal openings are open to the public. Technical Proposals will be opened by the Research Center at the date, time and location in the Timeline (See Introduction Section 2 Timeline). Price Proposals, which have a corresponding responsive Technical Proposal, will be opened by the Research Center at the date, time and location in the Timeline (See Introduction Section 2 Timeline).

#### **19) PROPOSAL EVALUATION**

##### **19.1 Evaluation Process:**

A Technical Review Committee (TRC) will be established to review and evaluate each proposal submitted in response to this Request for Research Proposal (RFRP). The TRC will be composed of at least three (3) persons who collectively have experience and knowledge in the program areas and service requirements for which the commodities and/or contractual services are sought.

The Research Center will distribute to each member of the TRC a copy of each technical proposal. The TRC members will independently evaluate the proposals on the criteria and point system established in the section below entitled "Criteria for Evaluation" in order to assure that proposals are uniformly rated. Due to the complexity of certain procurements, the TRC members are authorized to consult with subject matter experts for the purpose of gathering information, if needed. The independent evaluations will be sent to the Research Center and averaged for each university. Proposing universities must attain an average score of seventy (70) points or higher on the Technical Proposal to be considered responsive. Should a Proposer receive fewer than seventy (70) points for their average Technical Proposal score, the Price Proposal will not be opened.

During the process of evaluation, the Research Center will conduct examinations of proposals for responsiveness to requirements of the RFRP. Those determined to be non-responsive will be automatically rejected.

##### **19.2 Price Proposal**

The Proposer shall complete the Price Proposal form and submit as part of the Price Proposal Package. Any proposal in which this form is not used or in which the form is improperly executed may be considered non-

responsive and the proposal will be subject to rejection. The university's completed form shall become a part of the contract upon award of the contract.

The Research Center will open Price Proposals in accordance with Section 18, Proposal Openings. The Research Center will review and evaluate the price proposals and prepare a summary of its price evaluation. The Research Center will assign points based on price evaluation criteria identified herein.

### 19.3 Criteria for Evaluation

Proposals will be evaluated and graded in accordance with the criteria detailed below.

#### a. Technical Proposal ( 100 Points)

Technical evaluation is the process of reviewing the Proposer's response to evaluate the experience, qualifications, and capabilities of the proposers to provide the desired services and assure a quality product.

The following point system is established for scoring the technical proposals:

	<u>Point Value</u>
1. Technical Plan	
a. Understanding of the Scope	30
b. Proposed Research Approach	10
c. Innovative Concepts	10
2. Management Plan	
a. Qualification and Experience of Staff	20
b. Quality Control	10
c. Means of Coordination and Communication	05
d. Adequacy of Resources	05
3. Work Plan	
a. Time Requirements	10

#### c. Price Proposal ( 05 Points)

Price evaluation is the process of examining a prospective price without evaluation of the separate cost elements and proposed profit of the potential provider. Price analysis is conducted through the comparison of price quotations submitted.

The criteria for price evaluation shall be based upon the following formula:

$$\text{(Low Price / Proposer's Price)} \times \text{Price Points} = \text{Proposer's Awarded Points}$$

## 20) POSTING OF INTENDED DECISION/AWARD

20.1 The Research Center's decision will be posted on the Research Center's website at <http://www.dot.state.fl.us/research-center/RFRPs.shtm> on date and time in the Timeline, and will remain posted for a period of seventy-two (72) hours. Any proposer who is adversely affected by the Research Center's recommended award or intended decision must file the following with the Department of Transportation, Clerk of Agency Proceedings, Office of the General Counsel, 605 Suwannee Street, Mail Station 58, Tallahassee, Florida 32399-0450:

1. A written notice of protest within seventy-two (72) hours after posting of the Intended Award, (the notice of protest may be Faxed to 850-414-5264), and
2. A formal written protest and protest bond in compliance with Section 120.57(3), Florida Statutes, within ten (10) days of the date on which the written notice of protest is filed. At the time of filing the formal written protest, a bond (a cashier's check or money order may be accepted) payable to the

Department must also be submitted in an amount equal to one percent (1%) of the estimated contract amount based on the contract price submitted by the protestor.

Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

#### 20.2 - Inability to Post:

If the Research Center is unable to post as defined above, the Research Center will notify all proposers by electronic notification by mail and/or telephone. The Research Center will provide notification of any future posting in a timely manner.

#### 20.3 - Request to Withdraw Proposal:

Requests for withdrawal will be considered if received by the Research Center, in writing, within seventy-two (72) hours after the price proposal opening time and date. Requests received in accordance with this provision will be granted by the Research Center upon proof of the impossibility to perform based upon obvious error on the part of the proposer.

### **21) AWARD OF THE CONTRACT**

Services will be authorized to begin when the Vendor receives the following document(s), as appropriate, indicating the encumbrance of funds and award of the contract:

The Research Center will issue a task work order from the master university agreement to the university Receiving the award.

## **Exhibit A – Scope of Work**

### **Wind Effects on Mast Arms**

#### **Background Statement**

As traffic increases in Florida, additional signals and signs are frequently required on existing signal support structures. While these structures are in generally good condition, they were typically designed using old design specifications without any consideration for additional loading. The Florida DOT has a need to develop hardware that mitigates the wind load and analysis techniques that can be used to allow additional hardware on existing mast arm signal support structures while maintaining compliance with the current design specifications. The newly developed hardware and/or techniques could also be applied on new mast arm signal support structures to allow for more optimized designs.

#### **Project Objectives**

The objective of this research is to develop analysis techniques and hardware that can be used to mitigate the wind effects on existing mast arm signal support structures to allow for additional loading and still be in compliance with current design specifications. Mast arm signal systems should be investigated in their entirety (including the attachments) to evaluate methods that will allow for the installation of additional hardware.

To understand the current performance of the existing mast arm design standards and inventory, it is expected that an initial structural evaluation be performed. This evaluation shall include the current FDOT Mast Arm Design Standards and other common existing mast arm structures in the FDOT inventory. A minimum of ten different designs selected from current inventory should be evaluated. The evaluation should include the wind loading effects of existing traffic related hardware (e.g. signals, signs etc.) attached to the mast arm. Coordination with the FDOT Project Manager (PM) shall take place in the selection of the existing mast arm inventory to be evaluated. The evaluation shall include all current structural design practices and assumptions used in design.

This research will evaluate the design methodology and assumptions studied during the initial structural evaluation. If enhanced structural analysis techniques and/or improved design assumptions are viable based on the evaluation, the researcher shall recommend and justify new analysis methods and design assumptions. They shall provide analytical design examples comparing existing techniques and assumptions to the improved versions.

This research will evaluate methods and techniques to reduce wind effects on existing signal support structures by modifying the attached traffic related hardware. For the development of modified hardware, the researcher shall:

- Conceptually develop hardware or systems that reduce the wind loads on both new and existing systems.
- Provide detailed drawings depicting the design with the wind mitigating traffic related hardware.
- Develop testing procedures for evaluating the developed wind mitigating traffic related hardware and device(s).



- Evaluate the performance of the wind mitigation traffic related hardware and devices through testing.
- Based on the results of the testing perform an analysis showing the enhancements and limitations of utilizing the wind mitigating device(s) or system.

Wind mitigation hardware or analysis techniques should also be investigated for new signal support structures to allow for more optimized designs. The investigation should take into account that new designs could be more adaptable to innovative modifications and could be evaluated differently than existing systems.

### **Anticipated Tasks**

Task 1 – Kickoff meeting and Presentation – The principal investigator will schedule a kickoff meeting that shall be held within the first 30 days of task work order execution. The kickoff meeting will consist of a webinar at least 30 minutes in length. The purpose of the meeting is to review the tasks, deliverables, deployment plan, timeline, and expected/anticipated project outcomes and their potential for implementation and benefits. The principal investigator shall prepare a presentation following the template provided at [http://www.dot.state.fl.us/research-center/Program Information/Research.Performance/kickoff.meeting.pdf](http://www.dot.state.fl.us/research-center/Program%20Information/Research.Performance/kickoff.meeting.pdf). The project manager, principal investigator, and research performance coordinator shall attend. Other parties may be invited, is appropriate.

The university shall within the proposal provide a written description of a deliverable for each task. Each deliverable must be directly related to the scope of work. The timeframe for the deliverable submittal must be included in the Deliverables Schedule.

Task 2 – Development of Process and Procedures for Evaluation of Existing Signal Support Structures

Task 3 – Evaluation of Existing Support Structures (Design Standard and Inventory)

Task 4 – Develop Modified Analytical Techniques Based on Evaluation Data

Task 5 – Conceptually and Analytically Develop Hardware Designs to Mitigate Wind Effects

Task 6 – Evaluate the Performance of Develop Wind Mitigating Device(s)

Task 7 – Draft Final Report and Closeout Teleconference

Deliverable 7a – Ninety (90) days prior to the end date of the task work order, the university will submit a draft final report to [research.center@dot.state.fl.us](mailto:research.center@dot.state.fl.us)

The draft final report will contain (university shall insert description of information report will contain).

The report must be well-written and edited for technical accuracy, grammar, clarity, organization, and format.

Deliverable 7b – Thirty (30) days prior to the end date of the task work order, the principal investigator will schedule a closeout teleconference. The principal investigator shall prepare a PowerPoint presentation following the template provided at [http://www.dot.state.fl.us/research-center/Program Information/Research.Performance/closeout.meeting.reqs.pdf](http://www.dot.state.fl.us/research-center/Program%20Information/Research.Performance/closeout.meeting.reqs.pdf). At a minimum, the



principal investigator, project manager, and research performance coordinator shall attend. The purpose of the meeting is to review project performance, the deployment plan, and next steps.

#### Task 8 – Final Report

Deliverable 8 - Upon Department approval of the draft final report, the university will submit the Final Report on two (2) CDs. Both CDs shall contain the report in PDF and Word formats. CDs must be labeled in a professional manner and include contract number, task work order number, project title, and date.

The final report is due by the end date of the task work order and should be mailed to the Florida Department of Transportation, Research Center, 605 Suwannee Street, MS 30, Tallahassee, FL 32399-0450.

**Attachment 1**

### Deliverables / Schedule

The Research Center at a minimum must receive a deliverable every six months. Remember to include the Kickoff Meeting/Presentation and Closeout Meeting /Presentation on the schedule.

[illegible]